

**5**

FCS0000181



UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
07/041,994	04/24/87	EKLUND	K SS-520-01

THOMAS E. SCHATZEL  
3211 SCOTT BLVD., STE. 201  
SANTA CLARA, CA 95051-3093

EXAMINER	
JACKSON JR., J	
ART UNIT	PAPER NUMBER
253	5

DATE MAILED:

### EXAMINER INTERVIEW SUMMARY RECORD

All participants (applicant, applicant's representative, PTO personnel):

08/11/88

(1) Jack Edwards (2) Klas H. Eklund  
(3) Thomas E. Schatzel (4) Jerome Jackson

Date of interview 10 August 1988

Type: ☒ Telephonic ☐ Personal copy is given to ☐ applicant ☐ applicant's representative.

Exhibit shown or demonstration conducted: ☐ Yes ☒ No. If yes, brief description:

Agreement ☒ was reached with respect to some or all of the claims in question. ☐ was not reached.

Claims discussed:

all

Identification of prior art discussed:

Colak

Description of the general nature of what was agreed to if an agreement was reached, or any other comments: New amendments to the claims to be submitted distinguishing applicant's channel structure and surface adjoining layers 27 over Colak.

(A fuller description, if necessary, and a copy of the amendments, if available, which the examiner agreed would render the claims allowable must be attached. Also, where no copy of the amendments which would render the claims allowable is available, a summary thereof must be attached.)

Unless the paragraphs below have been checked to the contrary, A FORMAL WRITTEN RESPONSE TO THE LAST OFFICE ACTION IS NOT WAIVED AND MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW (i.e., Items 1-5 on the reverse side of this form). If a response to the last Office action has already been filed, then applicant is given one month from this interview date to provide a statement of the substance of the interview.

☐ It is not necessary for applicant to provide a separate record of the substance of the interview.

☐ Since the examiner's interview summary above (including any attachments) reflects a complete response to each of the objections, rejections and requirements that may be present in the last Office action, and since the claims are now allowable, this completed form is considered to fulfill the response requirements of the last Office action.

PTOL-413 (rev. 1-81)

Examiner's Signature

Jerome Jackson Jr.

ORIGINAL FOR INSERTION IN RIGHT HAND FLAP OF FILE WRAPPER

FCS0000182

**6**

**FCS0000183**

#6

PATENT

HAND CARRIED TO PTOCase Docket No. SS-520-01Date August 12, 1988In re application of: Klas H. EklundSerial No.: 07/041,994Filed: April 24, 1987For: HIGH VOLTAGE MOS TRANSISTORSATTN: BOX A.F.  
COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

Sir:

Transmitted herewith is an Amendment After Final for the above application.

☒ No additional fee is required.☐ Additional fee calculated as follows:

CLAIMS AS AMENDED						
	Claims remaining after amendment		Highest number previously paid for	Present extra.	Rate	Addnl. Fee
Total Claims	_____	Minus	_____ =	_____ x	\$12.00	= _____
Indep. Claims	_____	Minus	_____ =	_____ x	\$34.00	= _____

Additional Fee Due \$ \_\_\_\_\_

☒ A verified statement claiming small entity status ☒ has been filed; \_\_\_\_\_ is attached. The fee due is fifty percentum of the above.

Fee Due \$ \_\_\_\_\_

☐ A check in the amount of \$ \_\_\_\_\_ is attached.☒ Any additional fees may be charged to Deposit Account No. 19-0310. A duplicate of this transmittal is attached.

Respectfully submitted,

Attorney For Applicant

Law Offices of THOMAS E. SCHATZEL  
A Professional Corporation  
3211 Scott Boulevard Suite 201  
Santa Clara, CA 95054  
(408) 727-7077

By

Reg. No.: 22,611

FCS0000184

88  
PATENT  
8/15/88

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Klas H. Eklund

Group Art Unit: 253

Serial No.: 07/041,994

Examiner: J. Jackson, Jr.

Filed: : April 24, 1987

Attorneys Docket No.:  
SS-520-01

For : HIGH VOLTAGE MOS TRANSISTORS

ATTENTION: BOX A.F.

COMMISSIONER OF PATENTS  
& TRADEMARKS  
Washington, D.C. 20231

Date of this Paper:

August 12, 1988

AMENDMENT AFTER FINAL

In response to the U.S. Patent Office Action mailed June 17, 1988  
(Paper No. 4), please amend this application as follows:

In the Claims

Claim 19, line 12, before "layer" insert --surface adjoining--;  
line 22, before "region" insert --substrate--.

Claim 20, line 2, change "complimentary" to --complementary--.

Claim 22, line 2, change "complimentary" to --complementary--;  
line 3, change "complimentary" to --complementary--.

Claim 23, line 9, delete "a";  
line 10, change "position" to --positions--;  
line 11, before "layer" insert --surface adjoining--;  
line 18, delete "a";  
line 20, before "layer" insert --surface adjoining--;  
line 30, before "region" insert --substrate--.

REMARKS

The applicant appreciates the telephone interview on August 10, 1988, courteously granted by the Examiner.

Claim 19, as amended, now provides for an extended drain region of the second conductivity type extending laterally each way from the drain contact pocket to surface-adjoining positions and a surface adjoining layer of material of the first conductivity type on top of an intermediate portion of the extended drain region between the drain contact pocket and the surface-adjoining positions. The layer 16 of Colak is not surface-adjoining but is buried under layer 18. There is no layer of material of the first conductivity type on top of layer 18. Colak's layer 16 extends from beneath the drain contact pocket 24 to the channel region 20, and thus, is not between the drain contact pocket and the surface adjoining positions of the extended drain region.

Claim 19 also provides for the top layer of material and the substrate being subject to application of a reverse-bias voltage. Thus, the top layer and the substrate act as gates for controlling current flow through the extended drain region between the surface adjoining positions and the drain contact pocket. This structure can be considered a double-sided, junction-gate field-effect transistor (JFET). Colak shows a layer 14 intermediate a layer 16 and a substrate 12 that are subject to application of a reverse-bias voltage. Though this structure of Colak could be considered a double-sided JFET, layer 16 is not surface-adjoining as defined in claim 19. Colak's double-sided JFET is buried under layer 18 which is connected in parallel with layer 14 by semiconductor zones 16c, 16d. Layer 16 also acts as a gate for layer 18 so that layers 16 and 18 could be considered a single-sided JFET. Thus, the extended drain of Colak includes the single-sided JFET connected in parallel with the double-

sided JFET thereunder. Both the extended drain structure of claim 19 and Colak's drain structure have relatively high voltage capability. However, it is desirable to control the high voltage with relatively low voltage.

Claim 19 further provides for a substrate having a surface, an insulating layer on the surface of the substrate covering at least that portion between the source contact pocket and the nearest surface-adjointing position of the extended drain region, and a gate electrode on the insulating layer electrically isolated from the substrate region thereunder which forms a channel laterally between the source contact pocket and the nearest surface-adjointing position of the extended drain region. Thus, claim 19 is limited to a MOS or MOSFET structure, while Colak shows a D-MOS device. The MOSFET structure has a lower threshold voltage than a D-MOS device (0.7 volts compared to two - four volts for the D-MOS device) and thus, is directly compatible with five volt logic. D-MOS devices usually require an additional power supply of ten to fifteen volts for driving the gate. The MOSFET structure has less on-resistance and thus, further reduces the total on-resistance of the combined structure (MOSFET plus double-sided JFET).

Claim 19 is directed to the structural combination of a double-sided JFET and a MOSFET so that a high voltage transistor can be controlled with relatively low voltage. Thus, claim 19 is patentably distinct over Colak.

Claims 20-22 and claims 6-7 depend directly or indirectly from claim 19 and are thus patentably distinct from Colak for the same reasons as claim 19. While Thomas shows that high voltage FET devices are advantageously formed complementary and also integrated with low voltage devices, claims 20-22 are limited to transistors having the structure as defined in claim 19. This structure facilitates isolation of complementary high voltage devices and low voltage, C-MOS

implemented devices on the same chip. Isolation of the epitaxial layers shown by Colak from corresponding layers of a complementary device would be difficult.

Claims 6 and 7 include further limitations on the depth of the top layer and the doping density thereof. The depth is one-half or less than that disclosed by Colak for layer 16 and the doping density is at least five times greater. Furthermore, Colak's layer 16 is not similarly situated as the top layer of claim 19, and thus, is not comparable. Thus, claims 6 and 7 are patentably distinct from Colak for the same reasons as claim 19 and for the further limitations therein.

Claim 23 is directed to the transistor 63, shown in Fig. 5, that is suitable for source follower applications. This claim contains limitations similar to claim 19 for the MOSFET structure and the double-sided JFET about the drain contact pocket. It further includes structural limitations for a double-sided JFET about the source contact pocket. While the book by Sze discloses MOSFET structures having sources and drains that are similar to each other, such sources and drains are not similar to the double-sided JFET structures disclosed by the applicant and specifically claimed structurally in claim 23. Thus, claim 23 is patentably distinguished from Sze.

Should the Examiner be of the opinion that a telephone conference with applicant's attorney would be beneficial, he is invited to contact the undersigned at the number set out below.

Respectfully submitted,

Reg. No. 22,611

By

  
Thomas E. Schatzel

LAW OFFICES OF THOMAS E. SCHATZEL  
A Professional Corporation  
3211 Scott Boulevard, Suite 201  
Santa Clara, California 95054  
Telephone: (408) 727-7077



PATENT

CONDITIONAL PETITION FOR EXTENSION OF TIME

If any extension of time for this response is required applicant requests that this be considered a petition therefor.

Status

This application is on behalf of:

\_\_\_ other than a small entity

\_\_\_ verified statement attached

x small entity

x verified statement already filed

Payment of fees

x The Commissioner is hereby authorized to charge any additional fees as set forth in 37 C.F.R. 1.16 and 1.17 which may be required or credit any overpayment to Account No. 19-0310. A duplicate of this transmittal is attached.

NOTE: Please \_\_\_ also charge issues fees under 37 C.F.R. 1.16  
x do not  
to Account No. 19-0310.

Reg. No. 22,611

  
Attorney for Applicant

Telephone: (408) 727-7077

Law Offices of Thomas E. Schatzel  
A Professional Corporation  
3211 Scott Boulevard, Suite 201  
Santa Clara, California 95054

**7**

**FCS0000190**



UNITED STATES DEPARTMENT OF COMMERCE  
Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

SERIAL NUMBER	FILING DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NO.
07/041,994	04/24/87	EKLUND	K 55-520-01

THOMAS E. SCHATZEL  
3211 SCOTT BLVD., STE. 201  
SANTA CLARA, CA 95051-3093

EXAMINER	
JACKSON JR., J	
ART UNIT	PAPER NUMBER
253	7

DATE MAILED: 6-25-87  
06/16/87

### NOTICE OF ALLOWABILITY

#### PART I

1. ☒ This communication is responsive to Amend B 7/15/88
2. ☒ All the claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance And Issue Fee Due or other appropriate communication will be sent in due course.
3. ☒ The allowed claims are 6, 7, 19-23
4. ☐ The drawings filed on \_\_\_\_\_ are acceptable.
5. ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119. The certified copy has [ ] been received. [ ] not been received. [ ] been filed in parent application Serial No. \_\_\_\_\_, filed on \_\_\_\_\_.
6. ☐ Note the attached Examiner's Amendment.
7. ☐ Note the attached Examiner Interview Summary Record, PTOL-413.
8. ☐ Note the attached Examiner's Statement of Reasons for Allowance.
9. ☐ Note the attached NOTICE OF REFERENCES CITED, PTO-802.
10. ☐ Note the attached INFORMATION DISCLOSURE CITATION, PTO-1449.

#### PART II

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE THREE MONTHS FROM THE "DATE MAILED" indicated on this form. Failure to timely comply will result in the ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

1. ☐ Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.
2. ☒ APPLICANT MUST MAKE THE DRAWING CHANGES INDICATED BELOW IN THE MANNER SET FORTH ON THE REVERSE SIDE OF THIS PAPER.
  - a. ☒ Drawing Informalities are indicated on the NOTICE RE PATENT DRAWINGS, PTO-648, attached hereto or to Paper No. 2. CORRECTION IS REQUIRED.
  - b. ☐ The proposed drawing correction filed on \_\_\_\_\_ has been approved by the examiner. CORRECTION IS REQUIRED.
  - c. ☐ Approved drawing corrections are described by the examiner in the attached EXAMINER'S AMENDMENT. CORRECTION IS REQUIRED.
  - d. ☐ Formal drawings are now REQUIRED.

Any response to this letter should include in the upper right hand corner, the following information from the NOTICE OF ALLOWANCE AND ISSUE FEE DUE: ISSUE BATCH NUMBER, DATE OF THE NOTICE OF ALLOWANCE, AND SERIAL NUMBER.

#### Attachments:

- Examiner's Amendment
- Examiner Interview Summary Record, PTOL-413
- Reasons for Allowance
- Notice of References Cited, PTO-802
- Information Disclosure Citation, PTO-1449

- Notice of Informal Application, PTO-152
- Notice re Patent Drawings, PTO-648
- Listing of Bonded Draftsmen
- Other

*[Signature]*  
SUPERVISORY PATENT  
GROUP ART UNIT 2

X-85 (rev. 4-88)


**UNITED STATES DEPARTMENT OF COMMERCE**  
**Patent and Trademark Office**

 Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
 Washington, D.C. 20231

**NOTICE OF ALLOWANCE  
 AND ISSUE FEE DUE**
**THOMAS E. SCHATZEL**  
**3211 SCOTT BLVD., STE. 201**  
**SANTA CLARA, CA 95054-3893**

 All communications regarding this  
 application should give the serial  
 number, date of filing, name of  
 applicant, and batch number.

 Please direct all communications  
 to the Attention of "OFFICE OF  
 PUBLICATIONS" unless advised  
 to the contrary.

 The application identified below has been examined and found allowable  
 for issuance of Letters Patent. PROSECUTION ON THE MERITS IS CLOSED.

SC/SERIAL NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
07/041,994	04/24/87	007	JACKSON JR, J	253
From Parent Application	EKLUND,	KLAS H.		

 TITLE OF  
 INVENTION  
**HIGH VOLTAGE MOS TRANSISTORS**

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPL. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
SS-520-81	357-046.000	L46	UTILITY	YES	\$280.00	11/25/88

The amount of the issue fee is specified in 37 C.F.R. 1.18. If the applicant qualified for and has filed a verified statement of small entity status in accordance with 37 C.F.R. 1.27, the issue fee is one-half the amount for non-small entities. The issue fee due printed above reflects applicant's status as of the time of mailing this notice. A verified statement of small entity status may be filed prior to or with payment of the issue fee. However, in accordance with 37 C.F.R. 1.28, failure to establish status as a small entity prior to or with payment of the issue fee precludes payment of the issue fee in the amount so established for small entities and precludes a refund of any portion thereof paid prior to establishing status as a small entity.

THE ISSUE FEE MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE as indicated above. The application shall otherwise be regarded as ABANDONED. The issue fee will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the Patent and Trademark Office. Where an authorization to charge the issue fee to a deposit account has been filed before the mailing of the notice of allowance, the issue fee is charged to the deposit account at the time of mailing of this notice in accordance with 37 C.F.R. 1.311. If the issue fee has been so charged, it is indicated above.

In order to minimize delays in the issuance of a patent based on this application, this Notice may have been mailed prior to completion of final processing. The nature and/or extent of the remaining revision or processing requirements may cause slight delays of the patent. In addition, if prosecution is to be reopened, this Notice of Allowance will be voided and the appropriate Office action will follow in due course. If the issue fee has already been paid and prosecution is reopened, the applicant may request a refund or request that the fee be credited to a deposit account. However, applicant may request that the previously submitted issue fee be applied. If abandoned, applicant may request a refund or credit to a deposit account.

In the case of each patent issuing without an assignment, the complete post office address of the inventor(s) will be printed in the patent heading and in the Official Gazette. If the inventor's address is now different from the address which appears in the application, please fill in the information in the spaces provided on PTOL-95b enclosed. If there are address changes for more than two inventors, enter the additional addresses on the reverse side of the PTOL-95b.

The appropriate spaces in the ASSIGNMENT DATA section of PTOL-95b must be completed in all cases. If it is desired to have the patent issue to an assignee, an assignment must have been previously submitted to the Patent and Trademark Office or must be submitted not later than the date of payment of the issue fee as required by 37 C.F.R. 1.334. Where there is an assignment, the assignee's name and address must be provided on the PTOL-95b to ensure its inclusion in the printed patent.

Advance orders for 10 or more printed copies of the prospective patent can be made by completing the information in Section 4 of PTOL-95b and submitting payment therefor. If use of a deposit account is being authorized for payment, PTOL-95c should also be forwarded. The order must be for at least 10 copies and must accompany the issue fee. The copies ordered will be sent only to the address specified in section 1 or 1A of PTOL-95b.

☒ Note attached communication from the Examiner.

☐ This notice is issued in view of  
 applicant's communication filed \_\_\_\_\_

**IMPORTANT REMINDER**

 Patents issuing on applications filed on or after Dec. 12,  
 1980 may require payment of maintenance fees. See 37 CFR  
 1.20 (c)-(e).

**PATENT AND TRADEMARK OFFICE COPY**

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**8**

**FCS0000193**

Patent

778  
11-10-88

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Eklund, Kl  
Filed : 04/24/87  
Examiner : Jackson Jr.,  
Group Art Unit : 253  
Atty Docket No.: SS-520-01  
For : "HIGH VOLTAGE MOS TRANSISTORS"

Issue Batch No.: L66  
Allowance Date 08/25/88  
Serial No. : 07/041,994



Box Issue Fees  
COMMISSIONER OF PATENTS  
AND TRADEMARKS  
Washington, D. C. 20231

88 OCT 31 AM 8:09  
RECEIVED  
PATENT & TRADEMARK OFFICE  
DRAFTING BRANCH  
Date of This Paper  
October 19, 1988

FORMAL DRAWING TRANSMITTAL

Transmitted herewith are formal drawings for the above identified application as requested in the Notice of Allowance, Paper No. 7, mailed August 25, 1988. Corrections have been made as requested by the Examiner. Applicant respectfully requests that the formal drawings be filed.

Respectfully submitted,

By: Thomas E. Schatzel  
Thomas E. Schatzel  
Reg. No. 22,614

Attorney for Applicant

LAW OFFICES OF THOMAS E. SCHATZEL  
A Professional Corporation  
3211 Scott Boulevard, Suite 201  
Santa Clara, CA 95054-3093

Telephone: (408) 727-7077

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on 10/19/88

(Date of Deposit)  
Thomas E. Schatzel  
Signature  
10/19/88

FCS0000194

**KLAS H.EKLUND**  
**SS-520-QI**

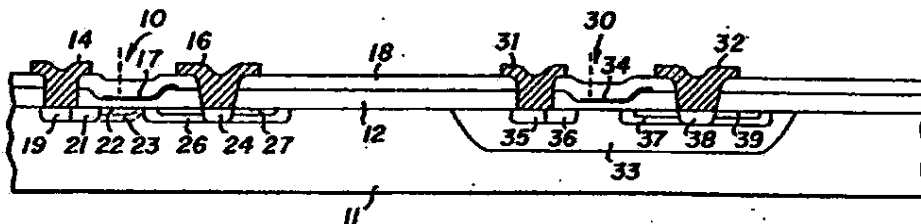
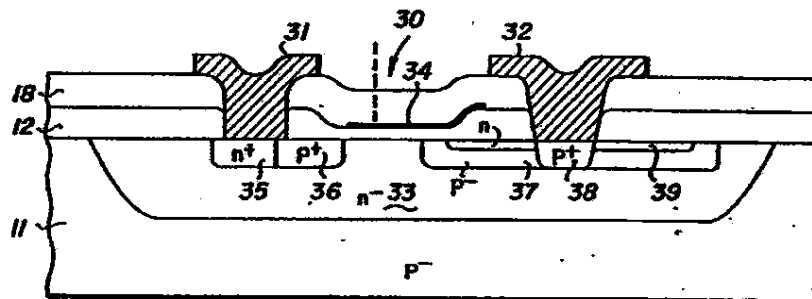
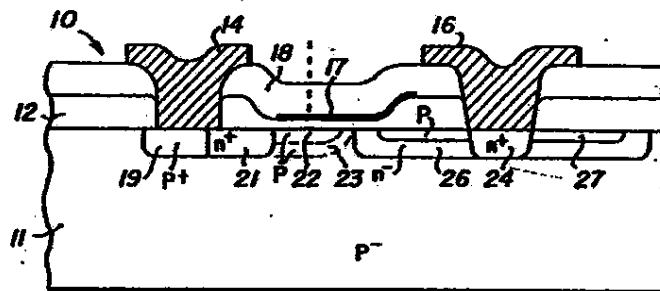
Notice of Allowance: 08/25/88  
 - ue Batch No. : L66  
 - ial No. : 07/041,994  
 Filed : 04/24/87

## U.S. Patent

**Mar. 7, 1989**

**Sheet 1 of 2**

**4,811,075**



KLAS H. EKLUND  
SS-520-01

Notice of Allowance: 08/25/88  
Issue Batch No. 166  
Serial No. 07/041,994  
Filed 04/24/87

U.S. Patent

Mar. 7, 1989

Sheet 2 of 2

4,811,075

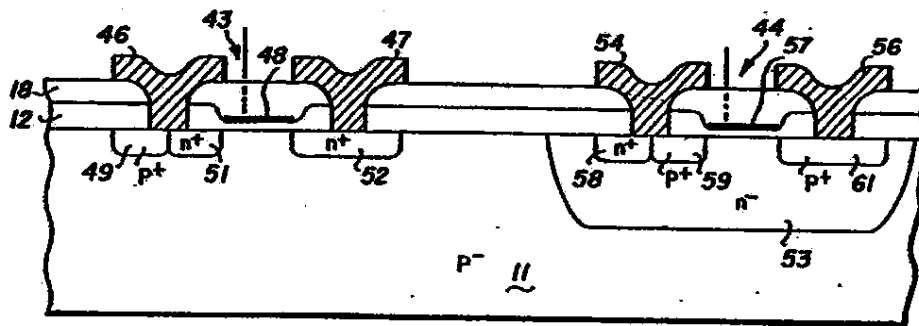


Fig. 4

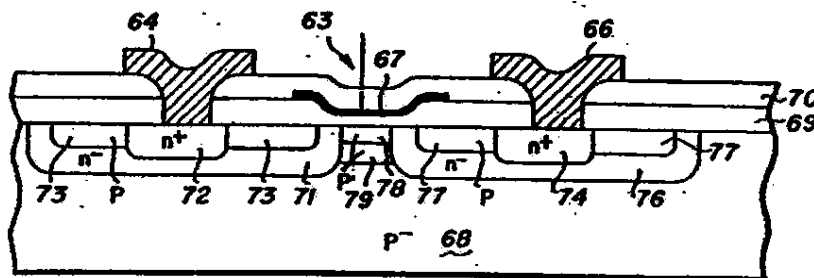


Fig. 5





Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Eklund, Klas H.                      Issue Batch No.: L66  
 Filed : 04/24/87                                      Allowance Date 08/25/88  
 Examiner : Jackson Jr., J.                      Serial No. : 07/041,994  
 Group Art Unit : 253  
 Atty Docket No.: SS-520-01  
 For : "HIGH VOLTAGE MOS TRANSISTORS"

Box Issue Fees  
 COMMISSIONER OF PATENTS  
 AND TRADEMARKS  
 Washington, D. C. 20231

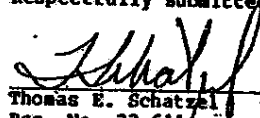
Date of This Paper  
October 19, 1988

PAYMENT OF ISSUE FEE (37 CFR 1.311)

1. Applicant hereby pays the issue fee.
2. Fee (37 CFR 1.18(a))  
     Application status is:  
         ☒ small entity-                                      fee \$ 280.00  
             ☒ Verified Statement attached  
             \_\_\_\_ Verified Statement filed  
         \_\_\_\_ other than small entity-                      fee \$ 560.00
3. Payment of fee  
     ☒ Enclosed please find check 11177 for \$ 302.00 \*  
     \_\_\_\_ Charge Deposit Account 19-0310 the sum  
         of \$ \_\_\_\_\_. A duplicate of this request  
         is attached.

\* Includes Advance Order and Assignment Recordal Fee

Respectfully submitted,

  
 Thomas E. Schatzel  
 Reg. No. 22,611

Attorney for Applicant

Law Offices of THOMAS E. SCHATZEL  
 A Professional Corporation  
 3211 Scott Boulevard, Suite 201  
 Santa Clara, CA 95054-3093  
 Telephone: (408) 727-7977

I hereby certify that this correspondence is being  
 deposited with the United States Postal Service as  
 first class mail in an envelope addressed to  
 Commissioner of Patents and Trademarks, Wash-  
 ington, D.C. 20231, on 10/19/88  
 Date of Deposit

Thomas E. Schatzel  
 Signature                      Date

FCS0000197

150 2/19/88  
15. 501

U.S. Department of Commerce  
Patent and Trademark Office

ISSUE FEE TRANSMITTAL

This form is part of a formal transmittal and should be used for transmitting the Issue Fee. Sections 1A through 5 must be completed and submitted.

INVENTOR'S NAME: **FORER, ROBERT**  
SC/SERIAL NO.: **24 1988**

Street Address: **24 1988**

City, State and ZIP Code: **24 1988**

CO-INVENTOR'S NAME: **PAPER NO. 11-111111**

Street Address: **PAPER NO. 11-111111**

City, State and ZIP Code: **PAPER NO. 11-111111**

☐ Check if additional changes are on reverse side.

**MARKING INSTRUCTIONS**  
All further correspondence including the Issue Fee Receipt, the Patent, and advanced order will be mailed to the address entered in section 1 or PTO-85c, unless you direct otherwise by specifying the correspondence and address in 1A below.  
(Note: See box 7 below for correspondence concerning maintenance fees for payments.)

**2A. The COMMISSIONER OF PATENTS AND TRADEMARKS is requested to apply the Issue Fee to the application identified below.**

(Signature of party in interest or agent) **Thomas E. Schatzel** Date **2/19/88**

Note: The Issue Fee will not be accepted from anyone other than the applicant, a registered attorney or agent, or the assignee or other party in interest as shown by the records of the Patent and Trademark Office.

SC/SERIAL NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP ART UNIT	DATE MAILED
07/011,777	04/24/87	887	JACKSON JR, J	253 08/25/88

First Named Applicant: **ENLIND, KLAS H.**

TITLE OF INVENTION: **HIGH VOLTAGE MOS TRANSISTORS**

ATTY'S DOCKET NO.	CLASS/SUBCLASS	BATCH NO.	APPL. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
SB-520-01	357-046.000	L46	UTILITY	YES	\$280.00	11/25/88

**1A. Further correspondence to be mailed to the following:**  
Law Offices of **THOMAS E. SCHATZEL**  
A Professional Corporation  
3211 Scott Boulevard, Suite 201  
Santa Clara, California 95054

**2B. For printing on the patent front page, list the names of not more than 3 registered patent attorneys or agents OR, alternatively, the name of a firm having as a member a registered attorney or agent. If no name is listed, no name will printed.**

1 **LAW OFFICES OF**  
2 **THOMAS E. SCHATZEL**  
3 **A Prof. Corporation**

DO NOT USE THIS SPACE

040	10/28/88	041894	1	242	280.00 CK
040	10/28/88	041794	1	501	15.00 CK

**3. ASSIGNMENT DATA (print or type)**

A. (1) ☐ This application is NOT assigned.  
(2) ☐ Assignment previously submitted to the Patent and Trademark Office.  
(3) ☒ Assignment submitted herewith.

B. For Printing On The Patent: (Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data below is only appropriate when an assignment has been previously submitted to the PTO or is submitted herewith. Completion of this form is NOT a substitute for filing of an assignment as required by 37 C.F.R. 1.334).

(1) NAME OF ASSIGNEE: **FORER INTEGRATIONS, INC.**

(2) ADDRESS: (City & State or Country) **Mountain View California 94043**

(3) STATE OF INCORPORATION, IF ASSIGNEE IS A CORPORATION: **California**

**4. The following fees are enclosed: CK. \$ 11177**  
☒ Issue fee ☒ Advanced order ☐ Assignment recording  
The following fees should be charged to deposit acc. no. **19-0310**  
(PTOL-85c or additional copy of PTOL-85b must be enclosed)  
☐ Issue fee ☐ Assignment recording  
☐ Advanced order ☒ Any additional fees due  
Number of advanced order copies requested: **10**  
(must be for 10 or more copies)

**5. All correspondence relating to maintenance fees will be addressed to the correspondence address unless a separate "Fee Address" is provided to the Patent and Trademark Office (37 C.F.R. 1.363). A "Fee Address" may be submitted by the owner of record with the payment of the Issue fee or thereafter by using form PTO-1537.**

TRANSMIT THIS FORM WITH FEE

FCS0000198

15 SEP 1988

ISSUE FEE TRANSMITTAL

U.S. Department of Commerce  
Patent and Trademark Office

This form is provided for use as a transmittal and should be used for transmitting the Issue Fee. Sections 1A through 4 must be completed as appropriate.

INVENTOR(S) ADDRESS CHANGE

INVENTOR(S) NAME

Street Address

City, State and ZIP Code

CO INVENTOR(S) NAME

Street Address

City, State and ZIP Code

☐ Check if additional changes are on reverse side.

**MAILING INSTRUCTIONS**

All further correspondence including the Issue Fee Receipt, the Patent, and advanced orders will be mailed to the addressee entered in section 1 on PTOL-85; unless you direct otherwise by specifying the appropriate name and address in 1A below. (Note: See box 5 below for correspondence concerning maintenance fee payments.)

2A. The COMMISSIONER OF PATENTS AND TRADEMARKS is requested to apply the Issue Fee to the application identified below.

Signature of party in interest: *Thomas E. Schatzel* Date: *7/19/88*

Note: The Issue Fee will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the Patent and Trademark Office.

SC/SERIAL NO.	FILING DATE	TOTAL CLAIMS	EXAMINER AND GROUP/ART UNIT	DATE MAILED
D7/441,974	01/24/87	007	JACKSON JR, J	253 09/25/87

Fee  
Status  
Applicant

EMEND  
KLAS H.

TITLE OF INVENTION  
HIGH VOLTAGE MOS TRANSISTORS

ATTY'S DOCKET NO.	CLASS-SUBCLASS	BATCH NO.	APPL. TYPE	SMALL ENTITY	FEE DUE	DATE DUE
SB-520-01	357-446.000	L66	UTILITY	YES	\$280.00	11/25/89

1A. Further correspondence to be mailed to the following:

Law Offices of THOMAS E. SCHATZEL  
A Professional Corporation  
3211 Scott Boulevard, Suite 201  
Santa Clara, California 95054

2B. For printing on the patent front page, list the names of not more than 3 registered patent attorneys or agents OR, alternatively, the name of a firm having as a member a registered attorney or agent. If no name is listed, no name will be printed.

LAW OFFICES OF  
THOMAS E. SCHATZEL  
A Prof. Corporation

DO NOT USE THIS SPACE

3. ASSIGNMENT DATA (print or type)

A. ☐ This application is NOT assigned.  
☒ Assignment previously submitted to the Patent and Trademark Office.  
☒ Assignment submitted herewith.

B. For Printing On The Patent: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data below is only appropriate when an assignment has been previously submitted to the PTO or is submitted herewith. Completion of this form is NOT a substitute for filing of an assignment as required by 37 C.F.R. 1.334.

(1) NAME OF ASSIGNEE:  
POWER INTEGRATIONS, INC.

(2) ADDRESS (City & State or Country):  
Mountain View California 94043

(3) STATE OF INCORPORATION, IF ASSIGNEE IS A CORPORATION:  
California

4. The following fees are enclosed: ☒ Ck. \$ 11177  
☒ Issue fee ☒ Advanced order ☒ Assignment recording

The following fees should be charged to deposit acc. no. 19-0310

PTOL-85c or additional copy of PTOL-85b must be enclosed

☐ Issue fee ☐ Assignment recording  
☐ Advanced order ☒ Any additional fees due

Number of advanced order copies requested: 10  
(must be for 10 or more copies)

5. All correspondence relating to maintenance fees will be addressed to the correspondence address unless a separate "Fee Address" is provided to the Patent and Trademark Office (37 C.F.R. 1.363). A "Fee Address" may be submitted by the owner of record with the payment of the issue fee or thereafter by using form PTO-1537.

TRANSMIT THIS FORM WITH FEE

FCS0000199



Applicant or Patentee: Klas H. Eklund Attorney's  
 Serial or Patent No.: 07/041,994 Docket No. SS-520-01  
 Filed or Issued: 04/24/87  
 Title: "HIGH VOLTAGE MOS TRANSISTORS"

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS  
 (37 CFR 1.27(c) - SMALL BUSINESS CONCERN)

I hereby declare that I am

- ☐ the owner of the small business concern identified below;  
☒ an official of the small business concern empowered to act on behalf of the concern identified below;

NAME OF CONCERN: POWER INTEGRATIONS, INC.  
 ADDRESS OF CONCERN: 411 Clyde Avenue  
Mountain View, CA 94043

I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 13 CFR 121.3-18, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees under section 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention, entitled "HIGH VOLTAGE MOS TRANSISTORS" by inventor(s) Klas H. Eklund described in

- ☐ the specification filed herewith  
☒ application serial no. 07/041,994, filed April 24, 1987  
☐ patent no. \_\_\_\_\_, issued \_\_\_\_\_

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights to the invention is listed below and no rights to the invention are held by any person, other than the inventor, who could not qualify as a small business concern under 37 CFR 1.9(d) or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e). \*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

NAME: N/A  
 ADDRESS: \_\_\_\_\_  
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION  
 NAME: N/A  
 ADDRESS: \_\_\_\_\_  
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING: Klas H. Eklund  
 TITLE OF PERSON OTHER THAN OWNER: Vice President, Engineering  
 ADDRESS OF PERSON SIGNING: Power Integrations, Inc., 411 Clyde Avenue,  
Mountain View, California 94043  
 SIGNATURE: [Signature] DATE: 4/24/88

FCS0000201





Atty. Docket No.: SS-510-01 *770*

POWER OF ATTORNEY BY ASSIGNEE

I, undersigned, as Assignee of the entire right, title, and interest in and to the subject matter which is described and claimed and for which a patent is sought on the invention entitled:

HIGH VOLTAGE MOS TRANSISTORS

the specification of which

☐ is attached hereto;

☒ was filed on April 24, 1987 as Application Serial No. 07/041,994 and was amended on 04/11/88; 08/15/88; (if applicable)

Assignment recorded on \_\_\_\_\_ at Reel/Frame \_\_\_\_\_ (if applicable)

I hereby elect to control the prosecution of this application and hereby appoints the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office in connection therewith:

Thomas E. Schatzel Reg. No. 22,611

Address all correspondence to:

LAW OFFICES OF THOMAS E. SCHATZEL  
A Professional Corporation  
3211 Scott Boulevard, Suite 201  
Santa Clara, California 95054-3093

Address all telephone calls to Thomas E. Schatzel at telephone No. (408) 727-7077.

Assignee hereby petitions and requests that this file be closed to the inventor(s), or representative(s) thereof.

POWER INTEGRATIONS, INC.

Dated: 11/18/88

by *[Signature]*  
Klaus H. Eklund

Title: Vice President, Engineering

POWER INTEGRATIONS, INC.  
411 Clyde Avenue  
Mountain View, California 94043







U.S. DEPARTMENT OF COMMERCE  
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231

Paper No. 11

3 - JAN 1989

253 4/24/87 04/1/94  
Karl H. Eklund  
High Voltage MOS transistors

This is in response to the communication re the Power of Attorney filed 10/21/88

1. ☐ The power of attorney to you in this application has been revoked by the applicant.
2. ☐ In view of the notice in this application of the death of \_\_\_\_\_ his power of attorney is terminated.
3. ☒ The power of attorney to you in this application has been accepted by the Commissioner of Patents, & Trademarks.

For Director, Opposition

4. ☐ The assignee in this application has intervened and appointed an attorney of his own selection. Further correspondence will be held with said attorney. (Rule 36, Rules of Practice.)
5. ☐ The revocation of the power of attorney to \_\_\_\_\_ has been entered and said attorney has been notified. Further correspondence will be addressed to you.
6. ☐ On \_\_\_\_\_, the applicant appointed \_\_\_\_\_ as additional attorney in this application. Further correspondence will continue to be addressed to you as specified in the new power of attorney.
7. ☐ On \_\_\_\_\_, the applicant appointed \_\_\_\_\_ as additional attorney in this application. Further correspondence will be addressed to said attorney. MPEP 403.02.
8. ☐ The associate power of attorney to you in this application has been revoked by the attorney of record.

Thomas E. Schetzl

Law Office of Thomas E. Schetzl  
A Professional Corp.  
3014 West 1st Ave., Ste 201  
Chandler, AZ 85226-3073

L. E. Eklund  
For Director, Opposition

RETAIN THIS COPY IN THE APPLICATION FILE

FORM PTOL-305 (REV. 9/75)

Copy A

FCS0000205



Attorney Docket No.: SS-520-01 PCO

PATENT & TRADEMARK  
OFFICE PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent No. 4,811,075

PATENT MAINTENANCE  
DIVISION

Granted: 03/07/89

Inventor(s): Klas H. Eklund

7041 994

Box: Patent Address Change  
Commissioner of Patents and Trademarks  
Washington, D.C. 20231

ENTERED BY PMD (12)

## CHANGE OF CORRESPONDENCE ADDRESS IN PATENT

Please

1. Change the address of the attorney(s) of record to:

Thomas E. Schatzel, Esq.  
LAW OFFICES OF  
THOMAS E. SCHATZEL  
A PROFESSIONAL CORPORATION  
16400 LARK AVENUE, SUITE 300  
LOS GATOS, CA 95032

2. Change the correspondence address of the patent owner to:

It is certified that the person whose signature appears below has the authority to change  
the correspondence address for the patent.

Date: 05/03/93

LAW OFFICES OF  
THOMAS E. SCHATZEL  
A PROFESSIONAL CORPORATION  
16400 LARK AVENUE, SUITE 300  
LOS GATOS, CA 95032

(Signature)

THOMAS E. SCHATZEL

- ☐ Inventor(s)  
☐ Assignee of complete interest  
☒ Attorney or agent of record

Tel. No.: (408) 358-7733

Reg. No.: 22,611

(if applicable)

I hereby certify that this correspondence is being  
 deposited with the United States Postal Service in  
 first class mail in an envelope addressed to:  
 Commissioner of Patents and Trademarks, Wash-  
 ington, D.C. 20231, on 05/03/93  
 (Date of Deposit)

Thomas E. Schatzel

(Signature) *Thomas E. Schatzel*  
 Date

THOMAS E. SCHATZEL  
 16400 LARK AVENUE, STE. 300  
 LOS GATOS, CA 95032

(Change of Correspondence Address in Patent [12-6])

FCS0000206